

EDITOR'S COMMENTS

By Janice Kaspersen

Pollutants From a New Direction

The world seems smaller all the time, and cause and effect work in sometimes unexpected ways. If it's not the proverbial butterfly flapping its wings halfway around the globe and causing changes in your local weather pattern, perhaps it's the dust storm in northern Africa or the power plant three counties

over that's going to affect the results of your water-quality monitoring program in ways that you'll be hard pressed to explain.

We're accustomed to looking within the watershed to explain local water-quality monitoring results, concentrating on point-

and nonpoint-source pollutants. But there are other sources of pollutants as well, some of them coming from above. Atmospheric deposition is now recognized as a significant source of pollutants for water bodies.

John C. Ogden, who teaches biology at the University of South Florida and is the director of the Florida Institute of Oceanography, recently provided some numbers to clarify the phenomenon. Speaking at StormCon in Orlando in July, Ogden cited the two main sources of marine pollution: Land runoff accounts for 44%, and airborne sources—everything from industrial output to Saharan dust clouds, which incidentally contain iron in amounts that can be toxic to coral reefs—for another 33%. Just days after he spoke, the National Weather Service warned of a large dust cloud, which had originated in the Sahara Desert, approaching Florida.

Although Ogden's area of study is oceanography, the numbers aren't drastically different for freshwater systems. Airborne pollutants settle on the water's surface as well as in drainage areas, where they are washed into lakes and streams. Anyone developing TMDLs and monitoring for specific pol-

lutants must take these into account with their sometimes seasonal and sometimes just unpredictable variations.

Even the most elusive nonpoint-source pollutants are confined, more or less, to a general area; we know that a particular belt of agricultural land or a highway or an urban watershed is the most likely source of the nitrogen or copper or sediment that's showing up in our lake. Each of these areas falls within a particular jurisdiction and can be regulated to some extent. Airborne pollutants—some traveling from continents half a world away—as Ogden points out—are not as respectful of boundaries and jurisdictions.

The EPA has defined the term *airshed*, the geographic area responsible for at least 75% of the air pollution that reaches a given water body. The map of an airshed appears very different—and generally much larger—than the watershed for the same lake. Pollutant sources can include combustion of fossil fuels, dust from unpaved roads and poorly controlled construction sites, pesticide spraying, fires, even volcanoes. Although some of these are regulated under the Clean Air Act, and though the EPA has been getting tougher, in some cases, about enforcing air-quality rules, watershed managers have little or no direct influence on sources of airborne pollutants even within their political jurisdictions.

The National Atmospheric Deposition Program, a collaboration among state agencies, the US Geological Survey, the US Department of Agriculture, and many other agencies, maintains more than 200 monitoring sites across the country to collect data on the constituents in wet deposition—rain. Historical data are available, by state and by watershed, on the program's Web site (<http://nadp.sws.uiuc.edu>). There is a lag time between data collection and posting on the site, and data aren't available for dry deposition, but this is still a good starting point if you're interested in seeing trends in airborne pollutants in your area.



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